consider the bright ring they then saw as new. On looking over my note-book I find I observed indications of such a bright ring extending inwards as far as the limb of ball. The exact words are, "I see a brighter line here," with a sketch according in position with the position of the ring shown by Messrs. Henry. The date of this observation is November 28, 1881, 11h. 35m. to 11h. 55m. I had noticed a great difference in comparing this observation with the fine sketch (given in "Instruments and Publications of the U.S. Naval Observatory, 1845–1876") by Trouvelot, made with the large telescope at Washington in 1875. In this sketch this edge, that I saw bright and that Messrs. Henry show brighter, is shown as dull and breaking up. It is true that Trouvelot saw and sketched the *other side* of the rings, but that will scarcely account for what is certainly a great difference. In the text relating to this drawing of Trouvelot's this occurs: "Of this and the succeeding figures it may in general be said that nothing is laid down which was not seen by more than one observer. The exception to this is in the case of the notches represented on the inside of the outer ring of Saturn, which were seen by M. Trouvelot with the 15-inch telescope of Harvard College Observatory, and again in Washington, and of whose existence he has no doubt."

It will be extremely interesting to know what M. Trouvelot can now see with the same instruments, as the evidence of rapid change is very strong. A. AINSLIE COMMON

June

An Experiment in Thought-Transference

THOSE of your readers who are interested in the subject of thought-transference, now being investigated, may be glad to hear of a little experiment which I recently tried here. The series of experiments was originated and carried on in this city by Mr. Malcolm Guthrie, and he has prevailed on me, on Dr. Herdman, and on one or two other more or less scientific witnesses, to be present on several occasions, to critically examine the conditions, and to impose any fresh ones that we thought desirable. I need not enter into particulars, but I will just say that the conditions under which apparent transference of thought occurs from one or more persons, steadfastly thinking, to another in the same room blindfold and wholly disconnected from the others, seem to me absolutely satisfactory, and such as to preclude the possibility of conscious collusion on the one hand or unconscious muscular indication on the other.

One evening last week after two thinkers, or agents, had been several times successful in instilling the idea of some object or drawing, at which they were looking, into the mind of the blindfold person, or percipient, I brought into the room a double opaque sheet of thick paper with a square drawn on one side and a cross or X on the other, and silently arranged it between the two agents so that each looked on one side without any notion of what was on the other. The percipient was not informed in any way that a novel modification was being made; and, as usual, there was no contact of any sort or kind, a clear space of several feet existing between each of the three people. I thought that by this variation I should decide whether either of the two agents was more active than the other; or, supposing them about equal, whether two ideas in two separate minds could be fused into one by the percipient. In a very short time the percipient made the following remarks, every one else being silent: "The thing won't keep still." "I seem to see things moving about." "First I see a thing up there, and then one down there." "I can't see either distinctly." The object was then hidden, and the percipient was told to take off the bandage and to draw the impression in her mind on a sheet of paper. She drew a square, and then said, "There was the other thing as well," and drew a cross inside the square from corner to corner, saying afterwards, "I don't know what made me put it inside."

The experiment is no more conclusive at evidence than fifty others that I have seen at Mr. Guthrie's, but it seems to me somewhat interesting that two minds should produce a disconnected sort of impression on the mind of the percipient, quite different from that which we had formerly obtained when two agents were both looking at the same thing. Once, for instance, when the object was a rude drawing of the main lines in a Union Jack, the figure was reproduced by the percipient as a whole without misgiving; except, indeed, that she expressed a doubt as to whether its middle horizontal line were present or not, and ultimately omitted it. OLIVER J. LODGE

University College, Liverpool, June 5

The Earthquake

SHORTLY after the shock of April 22 (which, by the way, was felt here and in Doughty Street by people in bed at the time) I commenced to collect evidence for the preparation of a detailed report, at first with the object of placing the materials at the disposal of any individual or Society that might be willing to take the matter up, as I felt certain that such a visitation would not be allowed to pass without attracting the attention of scientific men. It afterwards occurred to me that, as the focus of the disturbance was in East Essex, the most appropriate Society to undertake the publication of the report would be the Essex Field Club, within whose province the subject fairly comes. Having secured the assistance of one of our members, Mr. William White, I brought the matter before the meeting of the Club on April 26, and, a week later, took the opportunity of going over the districts most affected, taking notes and measurements of the angles of cracks, twists of chimneys, the positions of stopped clocks, and collecting all other information bearing upon this which is certainly the most serious earthquake that has been recorded in Britain. On this journey I was accompanied by Mr. T. V. Holmes (late of the Geological Survey) and Mr. William Cole (Hon. Sec. of the Club); Dr. Henry Laver and Mr. J. C. Shenstone, of Colchester, giving us the benefit of their local knowledge as guides. Starting from Colchester, we visited Wivenhoe, Rowhedge, East Donyland, Abberton, Peldon, West and East Mersea, Langenhoe, Fingringhoe, and the intermediate hamlets.

Hearing that my friend Mr. G. J. Symons had also been over the ground, I communicated with him, and he kindly agreed to place the whole of his materials, consisting of field-notes, maps, correspondence, and newspaper reports, at my disposal as soon as he had completed a short report which he was preparing for his *Monthly Meteorological Magazine*, and which appears in the May number of that excellent periodical. Mr. E. B. Knobel (Sec. R.A.S.), having also visited the district, has favoured me with some notes and observations, and the local press having taken the matter up on our behalf, a set of queries applying for information on the most essential points has been freely circulated throughout the county. As the result of our joint labours, I now possess a vast amount of material that requires *reducing* (both literally and in the astronomical sense), and upon which I have been engaged for the past few weeks; but as the complete discussion of all the facts will take a considerable time, I refrain for the present from expressing any views either in confirmation of or in opposition to those already put forward by your correspondents. In the meantime I will ask permission to appeal either directly or through your columns for further information from scientific observers. R. MELDOLA

21, John Street, Bedford Row, June 7

I NOTICE that in Mr. Topley's account of the earthquake in your issue of May 1 (p. 17) there is no record of its having been felt in any part of Surrey. In order that those interested may fill in further points, I send you the inclosed interesting letter I have received from Mrs. Bernard. I may also add that it was felt near Farnboro' on the South-Western line of railway.

Deepdale, Reigate, June 6 H. H. GODWIN-AUSTEN

"Overross, Ross, Herefordshire, June 2

"I ONLY felt it slightly, but quite decidedly. We were at Bentsbrook on the Holmwood at the time. The house is rather high, and I was sitting up in bed in an upstairs bed-room, when at about 9.30 or perhaps a little sooner, I distinctly felt the bed shake (from head to foot, I think west to east, not across) two or three times, and after a pause shake again in the same way. I had no watch to see the exact time, but I had heard the clock strike nine, and guessed it was about twenty or twenty-five minutes past. I did not see any furniture move, it was too slight for that. But I remarked on it to a servant who came up a short time after, and said I feared there had been a dynamite explosion in London. I was very much interested to see 'Earthquake in England' in the paper next morning, and to think that I had felt it so far off. Mr. Charles Chaldecott (the doctor at Dorking) told me another lady, I think in Dorking, had felt it too.

"K. M. BERNARD"

Kohlrausch's Meter-Bridge

MR. GLAZEBROOK, in commenting at the Physical Society on my use of Kohlrausch's meter-bridge with the telephone for the

measurement of the resistance of the human body, suggested that the latter instrument was too sensitive, and that from self-induction perfect silence could not be obtained. Both these remarks are true; but if time and the chairman had permitted, I should have said that absolute silence is rarely got, but that the minimum of sound is so easy, after a little practice, to estimate, that one-hundredth of a revolution on either side of it is instantly detected. The bridge wire takes ten turns on the barrel; consequently this amount is the thousandth part of a wire three metres long. Using a fixed resistance of 100ω, the possible error is quite unimportant, and even with 1000ω it is far within other instrumental accidents.

But as in the somewhat similar case of counting "beats" between tuning-forks, a sensitive and an educated ear is needed. At first starting I found that I made considerable mistakes, one of which is recorded in a paper contributed to NATURE some weeks back.

W. H. STONE

Wandsworth

Simple Methods of Measuring the Transpiration of Plants

THE "potétomètre" described in NATURE, May 22, p. 79, appears to be an ingenious but a rather complicated instrument. Experience has, however, taught me that the extremest simplicity is most desirable. Mr. Ward hints at difficulties of manipulation which are quite conceivable. The plan I have adopted, and find to answer, as far as it goes, is to insert the cut end in a small test-tube and cover the surface of the water with a little oil. The whole can then be weighed to three places of decimals, and the absolute amount of loss in a given time is easily ascertainable.

But a serious objection must be made against all experiments with cut shoots and leaves, for they can only give, at best, unsatisfactory results. The amount of transpiration varies so much under the ever-changing conditions of light, heat, dryness, &c., that it is only by a long series of comparative experiments *with the same specimen* that the differences peculiar to each kind of plant can be ascertained; and no cut shoot can be employed for two or three days, much less for several days, as are necessary for obtaining satisfactory results; as the amount of loss steadily decreases till death ensues, although the shoot may be *apparently* quite healthy for a long time. I have been experimenting for several summers on the transpiration of plants under coloured lights, and at first used cut specimens, as so many experimenters have done, but I found they were most untrustworthy. I now grow the plants in miniature pots, which are covered up in gutta-percha sheeting. These can be weighed to two places of decimals. By this simple method all difficulties are entirely obviated.

GEORGE HENSLOW

Drayton House, Ealing

Worm-eating Larva

THE following note, which I received from the Rev. Robt. Dunn of Cricklade, may be worth publishing in reference to Prof. McKenny Hughes's "Notes on Earthworms." Mr. Dunn says: "This afternoon (May 6) on a gravel path I saw a worm wriggling in an unusual way, and stooping down I saw that a big earthworm had a smaller worm hanging on at the belt or knob, or whatever you call it; so I got a bit of stick and pushed off the parasite and found it no worm, but I should say a sort of centipede, with a very red head, about one inch long. So I captured him and put him in methylated spirit, when he vomited what I presume was worm's blood." He further adds that what the beast vomited was a stream of crimson fluid; it separated at once into white flocculent matter with brick-red specks, but since it has all turned into a white sediment. Mr. Dunn sent me the animal, which proves to be the larva of a beetle, either one of the Staphylinidæ or Geodephaga.[1]

Southampton W. E. DARWIN

Cultivation of Salmon Rivers

I HOPE we may assume, from the paragraph which appears among the "Notes" in your issue of last Thursday (p. 129), that the Fishery Board for Scotland is about to take some active course towards the removal of obstructions to the ascent of salmon up Scottish rivers. When you say the Board "is specially desirous to introduce as soon as possible a fishway at the falls, and this, when done, would open up some 500 miles of excellent fishing and spawning ground," I hardly think you can be alluding to any one particular river. Am I correct in supposing you refer to the aggregate mileage of rivers in Scotland now closed by *natural* obstructions, *i.e.* waterfalls? The Report of the Special Commission to inquire into the condition of the salmon fisheries of Scotland, published in 1871, informed us that the River Tay alone had some 115 miles of river blocked against the salmon by the two natural obstructions of the Tummel Falls and the Falls of Garry on the two important Tay tributaries from which the respective waterfalls are named. If your "Note" meant to include the entire mileage of Scottish rivers seriously affected by artificial dams of a more or less obstructive character (and their name is legion in Scotland), as well as by the natural barriers that occur, I think 500 miles of obstructed fishing and spawning ground is far too low an estimate; it might in fact, I should say, be multiplied at the very least by three. Now that theoretical plaything are being laid aside, and in their place appears a prospect of a more sound, natural, and scientific basis being made the foundation of our future salmon cultivation, the absolute necessity of opening up the natural breeding-beds of the fish will, it is hoped, become patent to every one, and the dream of my old friend the late William J. Ffennel, the father, so to speak, of our modern salmon fishery legislation and salmon river cultivation may at last be realised. "If I live," he said to me one day (I hardly care to remember how long ago it was, or how soon after he was taken from us), "I shall never rest until every weir and mill-dam in the three countries—England, Ireland, and Scotland—has a thoroughly good and permanent salmon ladder built upon it, or into it, or around it. We have shown we can restore the fisheries; we must now restore the rivers. That, sir, is the true position to take up, and that must be our next aim." Had Mr. Ffennel lived, river restoration would probably have progressed more than it has during the last decade.

MARK HERON

June 9

[The falls referred to in our note on the Fishery Board for Scotland last week (p. 129) are the Falls of the Tummel.—ED.

A RARE BRITISH HOLOTHURIAN

OF the six species of Holothurians with shield-shaped tentacles (the Aspidochirotæ) that are known to occur on the shores of the North Atlantic Ocean, two—*H. obscura* and *H. agglutinata*—were so shortly described by Le Sueur as to be still strange to American naturalists; no definite statement as to the presence of a true, that is, aspidochirote, Holothurian in the British seas has ever made its way into any systematic revision or synopsis of the class.

Shortly, however, after the publication of Forbes' "British Starfishes," Mr. Peach of Gorran Haven, Cornwall, published in the *Annals and Magazine of Natural History* for 1845 (vol. xv. p. 171) a short article on the "Nigger" or "Cotton-Spinner" of the Cornish fishermen, in which he quite rightly remarks that no typical Holothurian with twenty tentacles had been observed by Forbes, and exhibits a just pleasure in being able to say that he had discovered one. Later, two Irish naturalists—Prof. Kinahan and Mr. Foot—separately noted the existence of what one called *Cucumaria niger* and the other *Holothuria niger*. With an exception to be mentioned immediately, no writer has for nearly forty years given the least indication of a knowledge of the existence of this "Cotton-Spinner," and it may therefore be supposed that it was always with interest that I examined any form that came from the British seas. A short time since, on opening a Holothurian that had been in the British Museum for nearly twenty years, I found that, instead of those tubules which, arising from the wall of the cloaca, were first seen by Cuvier, and called Cuvierian organs by Johannes Müller, being small and inconspicuous, or, as often happens, altogether absent, they formed rather a large, almost solid, compact mass of

[1] Mr. W. F. Blandford has called my attention to an account of a similar encounter between a worm and a larva given in Dallas's "Elements of Entomology," p. 6.